Algebra Success Common Unit Plan #1:
Understanding Relationships through Statistics and Data

October 19th, 2021 - November 20th, 2021

UNIT DESCRIPTION

TABLE OF CONTENTS:

KEY INFORMATION:

This unit spans 6 weeks and it includes:

- 15 lessons (**TIP:** Anywhere you see a 🔒 you can click to open the lesson)
- 1 End of Unit Assessment
- 1 Mid-Unit Assessment (Quiz #1)
- 2 Performance Tasks

SUMMARY:

Students often ask 'why do we study algebra?' As a beginning high schooler everything in their world is unknown and constantly shifting. By approaching Algebra 1 through the lense of descriptive statistics, students' confidence as mathematicians is built by tapping into their prior knowledge and leveraging their lived experiences. Students' first encounter with high school Algebra will allow them to see it as a study of relatable relationships and not a system of abstract variables and arbitrary rules. In addition, now that they have gained exposure to pre-requisite skills, they will grow greater confidence with the mathematics in this unit.

The hope of this unit is for students to *leave the unit with a solid foundation of statistical analysis* and an *eagerness to explore real-world situations mathematically throughout the course.*

The unit begins with foundational understanding of statistics through using different methods of graphing. Students develop statistical sense building and analyzing box plots and histograms - something students should have some familiarity with. This then builds into students making inferences of relationships using scatterplots.

Specifically, this unit uses statistics as an *avenue* to promote students' understanding of *inputs and outputs as a relationship between two distinct variables that are related to one another which leads to supporting their understanding of functional relationships.* This understanding will take place at the end of the unit.

This approach builds the foundation of specific algebraic relationships and gives students a language to enter into the study of functions.

ALGEBRA SUCCESS DISCOURSE STRATEGIES:

The Algebra Success Discourse Strategies are designed to promote student-centered classrooms by giving students daily opportunities to experience rich mathematics by creating viable mathematical arguments, critiquing the reasoning of others and reasoning abstractly and quantitatively. Whenever possible, you should plan to increase dialogue between students in order to promote understanding.

This unit focuses on the following strategies:

- September - Three Reads
- October - Contemplate, Then Calculate
- November - Decide, and Defend

BALANCED CURRICULUM:

Lessons fall within four categories:

Inquiry:	Students are expected to discover, tinker, explore, etc...mathematics
Conceptual Understanding:	Students are asked to explain, determine, prove, show, compare, justify, etc...
Procedural Fluency:	Students are expected to graph, compute, find, etc…
Application Based:	Students are expected to apply what they have learned in single or multi-step word problems, model-building, etc.

COMMON CORE STANDARDS		
CC Stds Identifier: Major, Supporting, Spiraled		
STANDARD		**PREREQUISITE STANDARDS**
A-SSE.1	**What it says:** Interpret expressions that represent a quantity in terms of its context. **We should think:** Interpretation - how does an expression represent this real world example?	6.EE.A.2 - Write, read, and evaluate expressions in which letters stand for numbers. 7.EE.A.2 - Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. For example, a + 0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05."
N-RN.A.2.	**What it says:** Rewrite expressions involving radicals and rational exponents using the properties of exponents. **We should think:** Create - how do we use properties of exponents to write equivalent expressions?	HS.N-RN.A.1 - Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. For example, we define 51/3 to be the cube root of 5 because we want (51/3)3= 5(1/3)3 to hold, so (51/3)3 must equal 5.
N-Q.A.1	**What it says:** Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays. **We should think:** Application - how do we use unit conversion formulas to ensure proper analysis?	6.RP.A.3 - Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. 7.RP.A.1 - Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction 1/2/1/4 miles per hour, equivalently 2 miles per hour. 8.EE.A.4 - Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.
N-Q.A.2	**What it says:** Define appropriate quantities for the purpose of descriptive modeling	N/A

	We should think: Define - what is the best unit for the given circumstance and is the final answer written in those units?	
N-Q.A.3	**What it says:** Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. **We should think:** Interpretation - determining the reasonableness of a quantity that matches the context of the problem.	N/A
S-ID.A.1	**What it says:** Represent data with plots on the real number line (dot plots, histograms, and box plots). **We should think:** Represent - correctly answer questions by interpreting data in dot plots, histograms, and box plots.	6.SP.B.4 - Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
S-ID.A.2	**What it says:** Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets. **We should think:** Interpret - calculate center and spread of data sets to correctly interpret a function.	6.SP.A.2 - Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape. 6.SP.A.3 - Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number. 6.SP.B.5 - Summarize numerical data sets in relation to their context. 7.SP.B.3 - Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable. 7.SP.B.4 - Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. For example, decide

		whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book. HS.S-ID.A.1 - Represent data with plots on the real number line (dot plots, histograms, and box plots).
S-ID.A.3	**What it says:** Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers). **We should think:** Interpret - determine how the outlier affects the data.	6.SP.A.2 - Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape. 6.SP.B.5 - Summarize numerical data sets in relation to their context.
S-ID.B.6	**What it says:** Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. **We should think:** Create - create scatter plots and determine appropriate correlation.	8.SP.A.2 - Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line. 7.EE.A.2 - Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. For example, a + 0.05a = 1.05a means that “increase by 5%” is the same as “multiply by 1.05.”
S-ID.C.7	**What it says:** Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data. **We should think:** Interpretation - what is the slope and intercept of a data set in real world scenarios.	8.F.B.4 - Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values. 8.SP.A.3 - Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.
S-ID.C.8	**What it says:** Compute (using technology) and interpret the correlation coefficient of a linear fit.	8.SP.A.2 - Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a

	We should think: Compute - find the correlation coefficient of a data set.	straight line, and informally assess the model fit by judging the closeness of the data points to the line.
S-ID.9	**What it says:** Distinguish between correlation and causation. **We should think:** Interpretation - given the data, determine whether a correlation or causation.	8.SP.A.4 - Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores? 8.SP.A.1 - Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.

ENDURING UNDERSTANDINGS

- Statistics can be used to tell stories about a set of data and describe relationships between variables (S-ID.1 , S-ID.2, S-ID.3, S-ID.6, S-ID.7, S-ID.8, S-ID.9, N-Q.1, N-Q.2, N-Q.3)
- The way data is displayed influences how we interpret a given situation (S-ID.1 , S-ID.2, S-ID.3, S-ID.8)
- Decisions about correlation and causation can be made based on an understanding of how two variables are related in a given context. (S.ID.9)

ESSENTIAL QUESTIONS

- How can statistics be used to describe the relationships between two variables?
- What is the best way to display given data and how do I interpret this display?
- How does the behavior of one variable influence the behavior of the second variable?

KNOWLEDGE AND SKILLS

Knowledge: *Students will understand…*	**Skills:** *Students will be able to…*

• Histograms are used to display frequency of occurrences in a data set that has been divided into classes
• Box and whisker plot is defined as a graphical method of displaying variation in a set of data.
• Box and Whisker Plots display:
  ○ Minimum value: The smallest value in the data set
  ○ Second quartile: The value below which the lower 25% of the data are contained
  ○ Median value: The middle number in a range of numbers
  ○ Third quartile: The value above which the upper 25% of the data are contained
  ○ Maximum value: The largest value in the data set
• Representation of data influences how we interpret data.
• Statistics is about data. Graphs provide a representation of the data distribution and are used to understand the data and to answer questions about the distribution.
• A dot plot provides a graphical representation of a data distribution, helping visualize the distribution.
• Measures of the center are described as mean and median.
	• Represent and interpret data with plots on the real number line using histograms
	• Represent and interpret data with plots on the real number line using box plots
	• Compare measures of center and spread for two or more different data sets
	• Use the context of the data to explain differences in shape, accounting for outliers
	• Calculate the deviation from the mean by subtracting each value from the mean
	• Finding the mean and standard deviation using a calculator
	• Describe and interpret the correlation coefficient of a linear pattern (on a scatter plot).
	• Compute (using technology) correlation coefficient of a linear pattern (on a scatter plot).

- When the distribution is nearly symmetrical, the mean and the median of the distribution are approximately equal. When the distribution is not symmetrical (often described as skewed), the mean and the median are not the same.
- For symmetrical distributions, the mean is an appropriate choice for describing a typical value for the distribution. For skewed data distributions, the median is a better description of a typical value.
- For any given value in a data set, the deviation from the mean is the value minus the mean. Written algebraically, this is $x - \bar{x}$.
- The greater the variability (spread) of the distribution, the greater the deviations from the mean (ignoring the signs of the deviations).
- Interquartile range (IQR) describes how the data are spread around the median; it is the length of the interval that contains 50% of the data values.
- The median is used as a measure of the center when a distribution is skewed or contains outliers.
- A linear relationship has a constant rate of change and a distinct starting point.
- The strength and direction of a linear pattern (on a scatter plot) can be quantified using the correlation coefficient (r).
- While correlation coefficients (r) quantify the relationships between two variables, they do not help to determine whether the independent variable causes a change in the dependent variable.
- The size of the standard deviation is related to the sizes of the deviations from the mean. Therefore, the standard deviation is minimized when all the numbers in the data set are the same and is maximized when the deviations from the mean are made as large as possible.
- Strong correlation occurs when the data points are closer to the line of best fit, while weak correlations occur when the data points are further away from the line of best fit.
- When points cluster close to a line with positive slope, the correlation coefficient is almost 1, and with negative slope, the correlation coefficient is almost -1
- Points that do not cluster close to any line have a correlation coefficient of 0
- Positive association has correlation coefficients greater than 0, while negative association has correlation coefficients less than 0.

- Two variables can have a strong relationship with one another, as seen on a scatter plot, but might not have a causal relationship. A causal relationship exists when the change in one variable actually causes the change in the other (or is one of the primary causes).
- A scatter plot can be used to investigate whether or not there is a relationship between two numerical variables.
- A relationship between two numerical variables can be described as a linear or nonlinear relationship.

POTENTIAL SCAFFOLDS

- Display graphs in problems, unless the problem requires students to draw graphs as part of the task
- Prioritize the most essential problems of independent practice that is aligned to exit ticket
- Define vocabulary terms using comment boxes
- Pre-draw axis, including labels and given intervals
- Have major points of graph identified, including coordinates for points
- Change colors of different graphs, if more than one graph is drawn in a given axis. Label graphs as needed.
- Color code the different parts of the box and whisker plot to define the different quartiles.
- Teach students using graphing calculators to find the 5-number summary
- Sentence starters and frames for the writing prompts of the lesson
- Provide context to some of the problems in the independent practice
- Allow for students to use calculators to calculate the mean of a dataset
- Provide students with step-by-step reminders on the worksheet on how to find different measures of center and spread
- Allow for students to work with a buddy to support with directions
- Small group instruction for students who struggle with labs
- Provide students with larger graphs
- Allow for students to work with a buddy to support with directions
- Small group instruction for students who struggle with labs
- Use actual models to model representation of problem
- Annotate and label different graphs with their respective labels
- Provide step-by-step directions on how to calculate r-values using the calculator

Algebra Success

LEARNING PLAN - PACING CALENDAR OVERVIEW

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 1	Lesson 1.01	Lesson 1.02	Lesson 1.03	Lesson 1.04	Flex/Reteaching Day
Week 2	Lesson 1.05	Review Day	Administer Quiz #1	Review Quiz #1	Lesson 1.06
Week 3	Lesson 1.07	Lesson 1.08	Lesson 1.09	Lesson 1.10	Flex/Reteaching Day
Week 4	Lesson 1.11	Lesson 1.12	Lesson 1.13	Lesson 1.14	Lesson 1.15
Week 5	Performance Task Day 1 (A or B)	Performance Task Day 2 (A or B)	Performance Task Day 3 (A or B)	Performance Task Day 4 (A or B)	Performance Task Day 5 (A or B)
Week 6	Flex/Reteaching Day	Flex/Reteaching Day	Administer End of Unit Assessment #1		Review End of Unit Assessment #1

Algebra Success

LEARNING PLAN - PACING CALENDAR

🔓 This symbol denotes a hyperlink to a lesson plan.

Week One: *This week we use 'symmetrical,' 'skewed typical' and 'fluidly' to describe data distribution!*

🔓 Lesson 1.01 (MED)	🔓 Lesson 1.02 (MED)	🔓 Lesson 1.03 (MED)	🔓 Lesson 1.04 (MED)	Flex/Reteaching Day
Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
STANDARD(S): S-ID.1	**STANDARD(S):** S-ID.1	**STANDARD(S):** S-ID.1	**STANDARD(S):** S-ID.1	**FLEX/RETEACHING DAY**
LEARNING TARGET: I can construct and interpret a histogram.	**LEARNING TARGET:** I can construct a box and whisker plot.	**LEARNING TARGET:** I can interpret a box and whisker plot.	**LEARNING TARGET:** I can use graphs to describe how data points are distributed.	
LESSON OVERVIEW: In this **conceptual** lesson, students will understand that the best way to display the travel-time data is with a histogram and not a line plot or a dot plot. The lesson opens up with a Do Now asking to ID what is the best way to display the data. Histograms are best to display data frequencies. You should then model how to create a histogram using the data provided, and then ask students CFU questions that pushes their interpretation of the data. The rest of independent practice should revolve around creating and interpreting histograms.	**LESSON OVERVIEW:** In this **procedural-based** lesson students compare two data sets to connect interquartile range (IQR) to box plots. They will follow as you construct a boxplot for them. Prior to constructing the box plot for students, ask students the suggested questions of the Launch section of the Teacher Edition linked in the Resources below. To accomplish today's learning goals, the lesson should only encompass the Launch portion of the Teacher Edition. During the lesson introduce the terms 'symmetric' and 'skewed' to students. The concept is delved into with greater depth in the subsequent two lessons.	**LESSON OVERVIEW:** In this **application-based** lesson students create and interpret a box plot as well as describe how the shape of the box plot relates to data distributions. Specifically, students make decisions about outliers, (Q.4C) and the relationship between the mean and the median of a data set. To accomplish today's learning goals, the lesson should be limited to Problem 4.2 Questions A-E only in the lesson itself, then supplemented by additional questions found on the Independent Practice.	**LESSON OVERVIEW:** Over the past four days students became familiar with how to summarize a distribution by its center and variability from a dot plot, histogram, and box plot. To summarize their experiences, judicially use portions of this **inquiry-based** lesson to fit without compromising students opportunities to describe : (1) what a graph communicates (2) if a graph is 'symmetrical' or' skewed' (3)what is 'typical' for a given data set and (4) make conjectures about data sets and graphs.	

Algebra Success

Week Two *This week we deviate from the mean and review what we've learned!*				
🔒 Lesson 1.05 (MED)	Review Day	Administer Quiz #1	Review Quiz Day	🔒 Lesson 1.06 (MED)
Day 6	Day 7	Day 8	Day 9	Day 10
STANDARD(S): S-ID.3 **LEARNING TARGET:** I can determine how skewness affects the mean and median. **LESSON OVERVIEW:** Building off students' understanding of 'symmetric' and skewed data - this lesson asks students to make connections between mean, median and skewness. Use portions of this **application** lesson to support students in (1) observing and explaining why the mean and median are different for distributions that are skewed (2) selecting the appropriate description of center for symmetrical and skewed distribution of data. By the end of the lesson students should be able to generalize what shape of distribution would have a median that is less than the mean and what shape of distribution would have a median that is greater than the mean.	**REVIEW DAY**	**Administer Quiz #1** ***Please distribute UA Quiz and use Zipgrade to grade the tests.*** Algebra Success Unit 1, Quiz 1 Common Assessment Algebra Success Unit 1, Quiz 1 Common Assessment - Answer Key	**QUIZ REVIEW DAY**	**STANDARD(S):** S-ID.3 **LEARNING TARGET:** I can describe the relationship between variability and deviations from the mean. **LESSON OVERVIEW:** In this **conceptual** lesson, Exercise 1-4 is used to guide a critical discussion around the standard covered in this unit. This discussion allows you to identify misconceptions students have about making decisions when making comparisons of data presented on dot plots. It begins the conversation regarding variability which lays the foundation for understanding standard deviation by supporting students' understanding of the following concepts: (1) For any given value in a data set, the deviation from the mean is the value minus the mean. Written algebraically, this is $x - \bar{x}$. (2) The greater the variability (spread) of the distribution, the greater the deviations from the mean (ignoring the signs of the deviations).

Week Three *This week we make decisions about correlation and causation!*				
🔓 Lesson 1.07 (MED)	🔓 Lesson 1.08 (LOW)	🔓 Lesson 1.09 (HIGH)	🔓 Lesson 1.10 (HIGH)	Flex/Reteaching Day
Day 11	**Day 12**	**Day 13**	**Day 14**	**Day 15**
STANDARD(S): S-ID.3	**STANDARD(S):** S-ID.1, S-ID.3	**STANDARD(S):** S-ID.6	**STANDARD(S):** S-ID.6, S-ID.8	**FLEX/RETEACHING DAY**
LEARNING TARGET: I can make sense of standard deviation when using a calculator.	**LEARNING TARGET:** I can answer questions that address differences and similarities for two or more distributions.	**LEARNING TARGET:** I can make predictions about relationships with two distinct unknowns.	**LEARNING TARGET:** I can make claims about bivariate data and use scatter plots to justify my reasoning.	
LESSON OVERVIEW: In this **application** lesson students learn how to find the mean and the standard deviation of a data set using the calculator. This lesson should not be taught prematurely - it will place students at an intellectual disadvantage. Nor should the portion of the lesson where students are comparing the relative variability of distributions using standard deviations be ignored.	**LESSON OVERVIEW:** This **application** lesson uses rigorous examples to summarize the key learnings of the unit so far: • Histograms show the general shape of a distribution. • Box plots are created from the 5-number summary of a data set. • A box plot identifies the median, minimum, and maximum values and the upper and lower quartiles. • Interquartile range (IQR) describes how the data are spread around the median; it is the length of the interval that contains 50% of the data values. • The median is used as a measure of the center when a distribution is skewed or contains outliers.	**LESSON OVERVIEW:** Exploring the relationship between bridge thickness and strength, students make a table and graph of bivariate data and describe how the variables are related Specifically, in this **inquiry-based** lesson students conduct an experiment to explore a linear relationship. It is imperative that sufficient time be given for students to fully explore. This investigation gives students an opportunity to display collected data in a table and a graph, look for relationships, and use the relationships to make predictions. Students explore the fundamental question for the upcoming unit - do you think the relationship is linear?	**LESSON OVERVIEW:** Building off of their understanding from the previous day students will work in groups to investigate the conjecture that measures of parts of the body have predictable proportional relationships to each other (Vitruvius, 80–15 BC). In particular, the conjecture by Vitruvius that most people's arm span is roughly equal to their height is investigated. During this investigation students begin to use scatter plots to make claims and develop a definition about correlation and lines of best fit. This **inquiry-based** lesson can be completed as a group activity. If done remotely, complete the experiment questions as guided practice and assign the exit ticket as a way to summarize the	

	Students should complete the Exploratory Task together, with a quick review then students should complete the remaining of the questions independently. Then students should do the same for the second exploratory task.		findings of the experiment. It is essential that students reflect on the big ideas by the end of class with a whole class discussion and exit ticket.	

Week Four *This week, we calculate a correlation coefficient and make sense of what it means.*				
🔓 Lesson 1.11 (HIGH)	🔓 Lesson 1.12 (HIGH)	🔓 Lesson 1.13 (HIGH)	🔓 Lesson 1.14 (MED)	🔓 Lesson 1.15 (MED)
Day 16	**Day 17**	**Day 18**	**Day 19**	**Day 20**
STANDARD(S): S-ID.6, S-ID.7	**STANDARD(S):** S-ID.8	**STANDARD(S):** S-ID.6, S-ID.7, S-ID.9	**STANDARD(S):** S-ID.7, S-ID.8	**STANDARD(S):** S-ID.7, S-ID.8
LEARNING TARGET: I can tell if a linear model fits a scatter plot and determine whether this relationship is negative or positive.	**LEARNING TARGET:** I can make sense of a correlation coefficient of 1, 0, or –1.	**LEARNING TARGET:** I can describe the relationship between two variables fluidly.	**LEARNING TARGET:** I can recognize that not every relationship represented by a scatter plot is linear.	**LEARNING TARGET:** I can make decisions about scatter plots.
LESSON OVERVIEW: In this **conceptual** lesson, students review and extend their understanding and skill in analyzing correlated bivariate data to data for which the slope of the linear model is negative. During this lesson students will determine whether a linear model fits the data on a scatter plot, if there are outliers and whether the relationship is negative or positive. Allow for students to complete the questions in groups, and review it at the end. **NOTE:** A review of the meaning of slope and line of best fit may be necessary. Meaning can be supported using E-Math Instruction Unit 4 Lesson 5 **NOTE: DO NOT TEACH STUDENTS HOW TO CALCULATE SLOPE.** It is	**LESSON OVERVIEW:** This **conceptual** lesson is an investigation that allows students to interpret scatterplots to make predictions about the strength of the relationship. One important point about correlation that does not come up naturally in the analysis of roller coaster variables, is the fact that two variables can be strongly correlated without any implicit cause-and-effect relationship. To make this additional point, you can present the scatter plot on income from ice cream sales and profit at amusement parks. While there is clearly a linear trend in the bivariate data, ice cream sales do not cause people to go to amusement parks.	**LESSON OVERVIEW:** In order to build **conceptual** understanding and **procedural** fluency with bivariate data analysis this lesson has been merged with quantifying predictability. This lesson should be designed to build proficiency with bivariate data and describe the relationship between variables and distinguish between causation and correlation. **NOTE:** It is recommended that the two lessons indicated in the resources section be fused in a non-sequential way to build conceptual understanding of the relationship between scatter plots, correlation, and causation. Therefore, it is essential that the lessons are not taught as sequential lessons, but that lessons are	**LESSON OVERVIEW:** In this **inquiry-based** lesson students will engage in discourse around key mathematics – A scatter plot can be used to investigate whether or not there is a relationship between two numerical variables and a relationship between two numerical variables can be described as a linear or nonlinear relationship – to make sense of their own thinking and the thinking of others.	**LESSON OVERVIEW:** In this **application** lesson students will demonstrate their understanding of scatter plots. This exercise will summarize all students have learned about scatter plots prior to receiving the End of Unit Assessment.

more important that they can interpret slope in context.	**NOTE:** This lesson is a precursor to quantifying correlations.	crafted to build a flow of questions to allow students to draw conclusions about the relationship between scatter plots, correlation, and causation.		

Week Five: I will show what I learned in this unit in a Performance Task.				
Performance Task - Day 1	**Performance Task - Day 2**	**Performance Task - Day 3**	**Performance Task - Day 4**	**Performance Task - Day 5**
Day 21	**Day 22**	**Day 23**	**Day 24**	**Day 25**
DAY #1 - PROJECT INTRODUCTION	**DAY #2 - WORKING ON ROUGH DRAFT**	**DAY #3 - ROUGH DRAFT SUBMISSION**	**DAY #4 - ROUGH DRAFT REVISION**	**DAY #5 - FINAL DRAFT SUBMISSION**
LEARNING TARGET: I will be introduced to Performance Task.	**LEARNING TARGET:** I will create a project plan that highlights how I will spend my time to submit a timely final product.	**LEARNING TARGET:** I will submit a rough draft of Performance Task.	**LEARNING TARGET:** I will revise my rough draft in preparation for my final draft of my Performance Task.	**LEARNING TARGET:** I will submit my final draft of my Performance Task.
DUE: N/A	**DUE:** Optional Project Plan Submission	**DUE:** Rough Draft	**DUE:** N/A	**DUE:** Final Draft Submission
RESOURCES: Performance Task #1 - Best Basketball Player? Performance Task #1 - Does Texting Affect Your GPA?	**RESOURCES:** Performance Task #1 - Best Basketball Player? Performance Task #1 - Does Texting Affect Your GPA?	**RESOURCES:** Performance Task #1 - Best Basketball Player? Performance Task #1 - Does Texting Affect Your GPA?	**RESOURCES:** Performance Task #1 - Best Basketball Player? Performance Task #1 - Does Texting Affect Your GPA?	**RESOURCES:** Performance Task #1 - Best Basketball Player? Performance Task #1 - Does Texting Affect Your GPA?
LESSON OVERVIEW: On this day, students will be introduced to the task that they are completing, and will be allowed to ask any questions related to the task and the context of the problem. It is critical that students are grappling with the ambiguity of the task, and we are not over scaffolding the task for students. Students should begin creating a game plan on how to break down this task day-by-day in order to submit a complete assignment by Day #5.	**LESSON OVERVIEW:** On this day, students are working with each other and with the teacher to submit a rough draft of the report and box plot. Students that need additional support should be pulled in small groups for intentional remediation. For students that struggle with organization, consider having students submit a project plan that highlights what they are scheduled to work on for each day of the project.	**LESSON OVERVIEW:** On this day, students should submit their rough draft of their project. If students are completing their assignments on the computer, they should hand in an outline, or another form of the final assignment, which you are able to provide feedback on. It is critical that all students submit their draft this day, and that feedback is given to all students.	**LESSON OVERVIEW:** On this day, students should receive their rough drafts with comments attached to them for revision purposes. They should work with each other to enact the feedback and submit the final draft the following day.	**LESSON OVERVIEW:** Finally, on this day, students should submit their final draft of their assignments, with feedback implemented. All virtual submissions should be completed.

Week Six *I will show what I learned in this unit!*				
Flex/Reteaching Day	**Flex/Reteaching Day**	**Administer End of Unit Assessment**		**Assessment Review Day**
Day 26	**Day 27**	**Day 28**	**Day 29**	**Day 30**
FLEX/RETEACHING DAY	**FLEX/RETEACHING DAY**	**Administer End of Unit Common Assessment 1** ***Please distribute UA End of Unit Common Assessment and use Zipgrade to grade the tests.*** **Algebra Success Unit 1 End of Unit Common Assessment** **Algebra Success Unit 1 End of Unit Common Assessment - Answer Key**		**REVIEW END OF UNIT ASSESSMENT**

ACKNOWLEDGEMENTS

The Algebra Success Units were developed by the Urban Assembly with assistance from Dr. Bisola Neil, Spencer Robinson and Elizabeth Masalsky, and have been revised and adapted by the Urban Assembly with assistance from Rodolpho Loureiro and Shantay Mobley, and with feedback from all the participants of the Algebra Success program. We source and link to materials from EngageNY, EMath Instruction, New Visions for Public Schools and are grateful to the community of math educators and students who have given their time and expertise to continue to adapt and grow our collective learning.